

The following localities have afforded known fish :—

*New Britain*—*Pterois volitans*, L. *Therapon trivittatus*, Blk. *Muraena nebulosa*, Bl. *PlatyGLOSSUS scapularis*, Benn. *Saurus varius* Lacep. *Exocætus evolans* L. *Genyoroge melanura*, Rup,

*New Ireland*—*Tetrodon nigropunctatus*, Blk. *Serranus laui*. Forsk. *Ostracion cornutus*, L.

*Api*—*Chrysophrys Australis*, Gunth. *Chætodon xanthurus*, Blk. *Chætodon vittatus*, Blk. *Muraena Brummeri*, Blk.

*Duke of York's Group*—*Balistes verrucosus*, L.



#### SOME RESULTS OF TRAWL FISHING OUTSIDE PORT JACKSON.

BY WILLIAM MACLEAY, F.L.S., &c.

Whatever adds to our knowledge of the natural productions of the country, either on land or water, must be a matter of general interest. I need scarcely then, I think, offer any apology for the frequency with which I trespass on the time of this Society by laying before it short notices of new Fishes found in Port Jackson and its neighbourhood. I am aware that to the Ichthyologist these isolated descriptions of species, are, to say the least of it, troublesome, and that it would be far better and more convenient for the student, if I were to reserve these descriptions until the publication of a Supplement to my Catalogue of the Fishes of Australia, a work which I have now in hand. But I have an object to serve of a more utilitarian character, than the mere identification and nomenclature of species; I am desirous of seizing every possible opportunity of forcing upon the notice of the public the great value of our Fisheries, or rather of what might be their great value, were we disposed to develop them.

I have often said, and I repeat—and it cannot be repeated too often—we have in our seas a wonderful variety of the most excellent fishes, not surpassed in numbers, excellence and variety in any country in the world. We have herrings of various kinds visiting our shores annually in countless shoals, we have similar

shoals of mackerel, tailor, king-fish, trevally, and yellow tail. We might catch mullet—a fish equal to the salmon—in any quantity, if we had a market for it. We have whiting, garfish, schnapper, morwhong, Jew fish, sole, skate, John Dorey, and in fact good representatives of all the best kinds of Fishes in the world. It has always been inexplicable to me, how men of intelligence should deliberately shut their eyes and ears to such facts as these, and advocate the introduction from distant places of fishes which a bountiful nature has already amply supplied us with. And even if we had our seas as full of *Clupea harengus*, as they are now of *Clupea sagax*, of what use would it be, the schnapper line would be as useless to catch them, as the shallow seine net, and beyond these miserable appliances our fishermen seem incapable of going. It is however, gratifying to know that efforts towards improvement in fishing appliances are being made by the Commissioners of Fisheries. It is in this way, much more than by enforcing useless provisions in Acts of Parliament, that they have it in their power to confer lasting benefits on the country, and it is much to be regretted that their efforts are not more liberally aided by the Government than they are.

This Paper is, as its heading implies, a statement of the results of a trial made of a Beam Trawl a few weeks ago by order of the Commissioners, and it is to Dr. Cox, the President of the Commission that I am indebted for the information I am now enabled to give.

The Trawl was of the kind used at Grimsby, but made I believe here; a steamer was supplied by Government, and the trial was intended to occupy one week. The results were disappointing as regards the amount of work done, but that seems to have been due entirely to the severity of the weather, and the unfitness of the steamer for a heavy sea.

The Trawl was only put over the side twice during the week, and then only for an hour or two, so that the actual amount of ground trawled over was very small.

The following minutes of the actual results have been furnished to me by Dr. Cox—"November 26th. Trawl put down six miles

off the South Head of Botany Bay, in 40 fathoms of water, it was kept down for three hours, at the end of which time it was working in 55 fathoms of water. The Trawl was found to contain no weeds, but showed evidence of having been well on the ground.

In the Trawl were found,

3 dozen *Lepidotrigla*.

Several small John Dorey (*Zeus australis*.)

2 dozen small sting rays.

4 skates (*Raia*), about 4 lbs. weight.

Several small saw-fish."

"2. November 27th. Trawl put down four miles off Colamulla Reef in 22 fathoms water, steering south-by-east. The Trawl was kept down three hours, and when raised was in 40 fathoms of water, the haul consisted of,

Several dozen of *Lepidotrigla*.

14 John Dorey.

6 saw-fish sharks (*Pristiophorus*.)

A number of sting rays.

A flathead.

3 small soles."

Of these the *Lepidotrigla* and *Raia* are new, and will be described at the end of this Paper. Looked at as a whole, I consider the results of this trawling experiment as decidedly promising. The existence of a true skate so near us and in such apparent quantity, is of itself a valuable discovery; the abundance of the John Dorey is also important, for it has hitherto been considered rare, and for its quality as a food fish it is unrivalled in the world. The new species of *Lepidotrigla* seems to be very abundant in these moderate depths, but its size is not sufficient to make it valuable in a commercial sense. The paucity of *Pleuroneatidae* I should feel inclined to ascribe, notwithstanding the opinion given to the contrary in the minute quoted above, to the probability that the trawl did not as a rule closely scrape the ground, and the fact that it came up free of weeds seems to strengthen this supposition.



This, the first attempt at deep water trawling in New South Wales, whether looked upon as unsuccessful or fairly successful, proves one thing incontestably, and that is, that we know very little indeed of the inhabitants of our seas excepting those which are mere surface animals. Of the few fishes dredged up from depths of 40 or 50 fathoms, two were utterly unknown before, and the others were looked upon as extremely rare. I trust that the Commissioners will make further attempts to educate our fishermen in trawling, and to show what can be done by that mode of fishing; but I may be allowed to suggest also, that they should have the survey of the sea bottom out to the 100 fathom line, which was commenced in October 1882, completed as soon as possible, as it is unreasonable to suppose that fishermen can risk the entire loss of such costly nets as the Beam Trawl on unknown ground.

The following are the descriptions of the two new captures : —

LEPIDOTRIGLA MULHALLI.

D. 9/15. A. 15. L. lat. 53.

Scales regular and smooth, only those on the lateral line slightly keeled and spinous. Head rough and granular, projecting over the mouth in a subspatulate form with the angles strongly spinous, the sides strongly serrated and the middle in front emarginate. The top of the head between the eyes is concave. The operculum is armed with one acute spine, the coracoid bone is very large and terminates in a long acute spine; there is a prolongation of the skull on each side above the lateral line which also terminates in a large acute spine. The caudal fin is scarcely emarginate, the ventrals are nearly as long as the pectorals and are inserted slightly in advance of them, both fins reach the anal. The colour is of a beautiful red all over, with occasional deeper red blotches on the fins and parts of the body; the pectorals are, except at the base, entirely-bluish black beneath.

This Fish was found in abundance in 40 fathoms of water outside the Heads; the average length was 9 inches. The genus *Lepidotrigla* is represented in these seas by several species; of which one *L. papilio* is known to inhabit Port Jackson, but I

have not been able to find that the present species has ever been seen before. I name it after Mr. Sub-Inspector Mulhall, to whom I am indebted for much of my knowledge of the Fishes of this country.

RAIA AUSTRALIS. n. sp.

Snout long, produced, roundly pointed, the terminal third covered with spinous granules above and beneath ; the width of the interorbital space one-fourth or nearly so of the distance of the eye from the end of the snout. The profile from the snout to the extremity of the pectoral fin is emarginate on the sides of the snout, then gently sinuate, and again lightly and lengthily emarginate. Mouth transverse, straight, teeth in the upper jaw in a semi-lunar patch. Outer pectoral angle rounded, along its edge from in front of the eye to near the angle, a dense band of small granular looking spines, becoming finer towards the angle ; six spines four of them small, in front of the eye ; three larger behind the eye. One strong short spine near the commencement of the vertebral column, the remainder of the back smooth. The disc is one-third broader than the length. A subcutaneous spine can be felt on each side near the commencement of the tail, that on the right side appearing to be behind the other. The tail is considerably shorter than the body measuring from the first spine, and is armed with three rows of strong, acute, recurved spines, for two-thirds of its length, beyond that the spines are continuous only in the central row, but the sides are covered with sharp granules ; it terminates in a point ; the spines are much more numerous in the female. The upper lobe of the ventral fin resembles a human hand with the fingers conjoined. The colour is brown on the back, becoming paler on the snout and pectoral fins. Under surface white.

This is the first instance I have known of a true *Raia* having been found in the neighbourhood of Port Jackson, though they are not uncommon farther south. In Tasmania and Port Phillip there are two known. *Raia Lamprieri* of Richardson, the Thorn back of the Melbourne fishermen, and *Raia rostrata* of Castelnau, a species which attains a great size. Another species, *Raia nitida*

taken in a trawl off Twofold Bay by the Challenger expedition, has since been described by Dr. Gunther. All of these, though belonging to the genus *Raia*, have no very marked resemblance to *Raia batis* the well-known Skate of Europe, but the species now described resembles the common Skate so closely, that to a casual observer they would appear identical. As an article of food, Skate has never been much in favour here, in fact, except in French Cafés and places of that kind, Rays flesh is scarcely used at all, but I believe the kind most in use is the *Trygon pastinaca* or the large black Sting ray. Whether the Australian Skate will become more popular as an article of food than the Sting ray, remains to be seen.

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THE "BAROMETRO ARAUCANO" FROM THE CHILOE ISLANDS.

BY N. DE MIKLOUHO-MACLAY.

Amongst the different interesting Ethnological, Archæological, and Zoological objects on board the Italian Corvette, "Caracciolo," which Captain C. de Amezaga, had the kindness to show me. I saw a peculiar instrument called the "Barometro Araucano," which as he explained to me, is used by the natives of the Chiloe Islands as an indicator of approaching rainy or dry weather, and change of wind.

This instrument is nothing else but the shell of a crab. Mr. W. Haswell has informed me that the crab belongs to the genus *Lithodes*, and Dr. F. Rho of the "Caracciolo" told me later, that he has seen the same in the collections of the Museum at Santiago in Chili, marked as *Lithodes Antarcticus*.

Capt. C. de Amezaga had this peculiar instrument with him during the voyage of the Corvette from the West Coast of South America to Sydney, and confirmed completely the statement heard by him from the Chiloans about the use of the instrument.

The ordinary colour of the shell during dry weather is light grey, which, as soon as the air gets damp becomes gradually covered with spots of a dark (reddish) tint. The increase of humidity in the atmosphere makes the spots larger, so that the shell is at last quite of a dark (reddish) colour.